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A new species of *Caladomyia* Säwedal, 1981, with description of the female and immature stages

(Insecta, Diptera, Chironomidae)

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The immatures and adults of *Caladomyia friederi*, spec. nov. are described from the southeast of Brazil. Characterizations of the larva and adult female are the first for the genus. The larvae live on the aquatic macrophyte *Mayaca fluviatilis* Aublet. Phenology information about adults and larvae is presented.

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Introduction

The genus *Caladomyia* was erected by Säwedal (1981) from material collected by E. J. Fittkau and F. Reiss in the Amazon area. Säwedal proposed two species groups based on adult male morphology, but described 8 species from only the *spixi*-group. Sublette & Sasa (1994) added another species from Central America. Reiff (2000), in a review of the entire genus, is reevaluating Säwedal's *orellanai*-group. In the present paper a new species of the *spixi*-group is described, for the first time in *Caladomyia* including all life stages (larvae, pupae, male and female adults).

Methods

Larval and adult densities at the type locality were estimated from XII.1992 through XII.1993. Monthly, a pair of 150 ml samples of the aquatic macrophyte, *Mayaca fluviatilis* Aublet, 1775 were taken, chosen as similar in plant structure as possible. From the first sample of each pair, chironomid immatures were quantitatively removed under a stereoscope with transillumination. The second was maintained in a container with pond water and enclosed in nylon mesh; all emerged adults were collected daily for 30 days. Eventually, each macrophyte sample was dried for 24 hs at 60 °C, and weighed according to Cyr & Downing (1988). In parallel, to obtain immature/adult associations, some larvae were isolated in small vials covered with nylon screen.

All material described below has been mounted on slides. Measurements are given as means followed by ranges in parentheses. The morphological terminology follows Sæther (1980) and Säwedal (1981).

Caladomyia friederi, spec. nov.

Figs 1-16

Types. Holotype: ♂ (in Euparal), Brazil, São Paulo, São Carlos, Federal University of São Carlos (UFSCar) campus, Lagoa Mayaca, 21°59'S, 47°54'W, 20.X.1993, leg. S. Trivinho-Strixino. – Paratypes (mostly in Euparal, 2♀♀ and the pupa in Hoyer's): 4♂♂, 5♀♀, all fully emerged; 1 pupal exuviae + assoc. ♂ on same slide; 5 larvae; all as holotype. Holotype and most paratypes deposited in Laboratory of Aquatic Entomology collection at Federal University of São Carlos, São Paulo, Brazil; 1♂, 2♀♀, 1 larva in Zoologische Staatssammlung Munich, Germany.

Etymology. The species is named after Friedrich ('Frieder') Reiss for his contributions to the knowledge of Neotropical Tanytarsini.

Diagnosis. The male of *Caladomyia friederi*, spec. nov. resembles *C. mulleri* Säwedal, 1981, but differs by the coloration including distinctly darkened parts, by a lower AnPBR, a shorter ventromedian part of the anal point, and by the superior volsella lacking a pronounced distalmedian projection. The female keys to *Stempellinella* in Sæther (1977), from which it is most easily separated by the nearly straight GcaVIII and the v-shaped, not rounded posteromedian contour of SVIII. The pupa differs from the only other described species, *C. spixi* Säwedal, by the absence of spinule fields on the abdominal tergites. Instead, *C. friederi*, spec. nov. presents widespread shagreenation on T II-VI and VIII-IX. Another difference is in the number of anal comb teeth. The larval characteristics approach *Cladotanytarsus*, mainly in antenna design and the presence of serrate claws on the posterior parapods. In our genus guide to Chironomidae larvae of São Paulo state (Trivinho-Strixino & Strixino 1995), the larva described above was named "*Cladotanytarsus* (?)". However, *C. friederi*, spec. nov. differs from *Cladotanytarsus* larvae by the presence of a distinct apical tooth on the antennal pedestal, and by the lower numbers of teeth on the mandible and premandible.

Description

Adult male (n=5)

Size small, length about 2 mm.

Head. Pale yellowish green. 5-7 uniserial temporal setae. Frontal tubercle length 8, basal width 4 μm. Antennal flagellum yellowish, length 700 μm (692-712); AR=0.78 (0.73-0.82). Eye bare, without dorsomedian extension. About 10 clypeal setae. Palp yellowish, lengths Pm 2-5: 30 (28-32), 55 (52-64), 77 (68-84), 129 (116-136) μm.

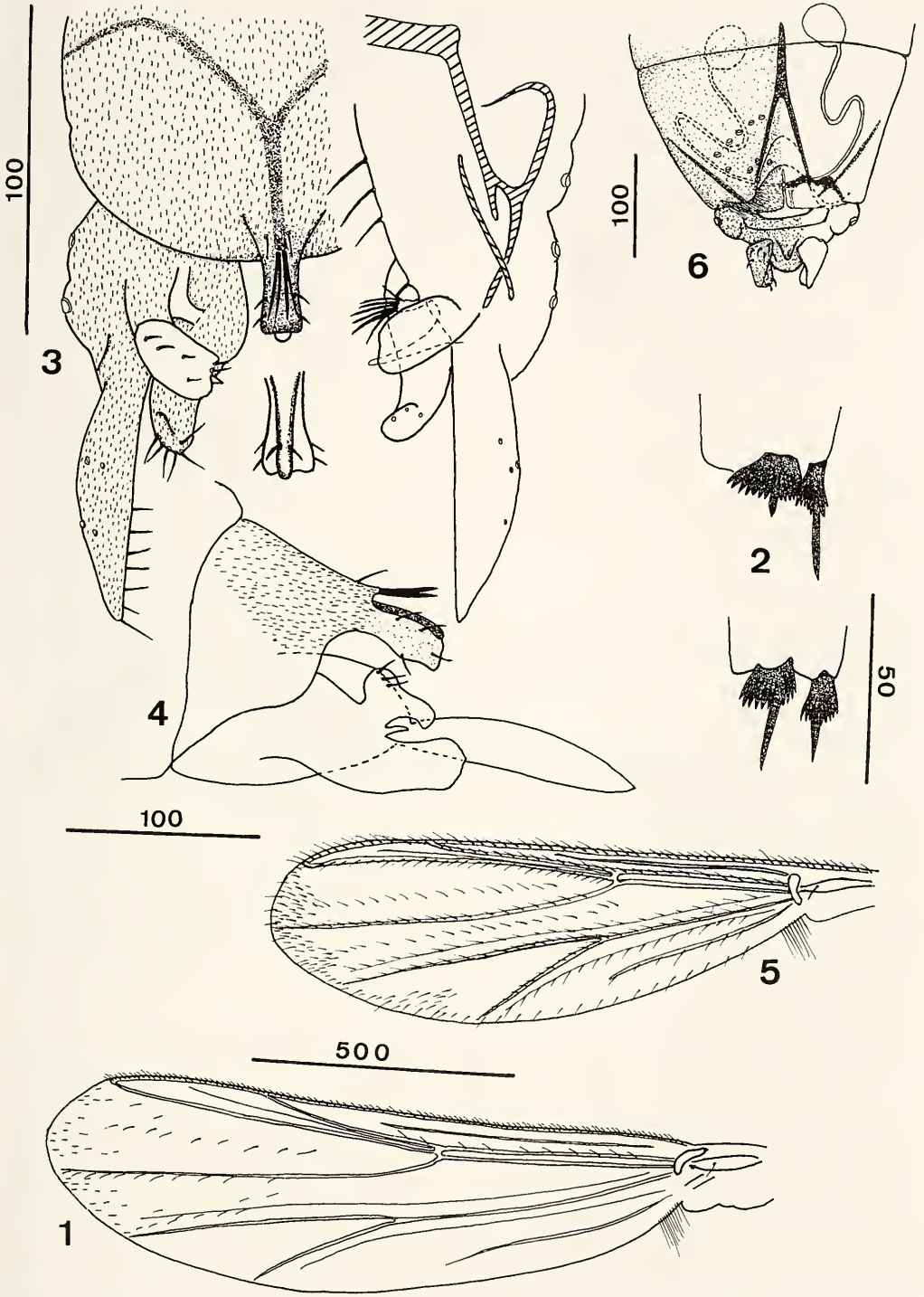
Thorax. Greenish with dark brown mesonotal stripes and postnotum, preepisternum brown. 0 acrostichal setae, 5-6 dorsocentrals, 1 prealar, 1-2 scutellars in central positions. Scutal tubercle absent.

Wing (Fig. 1). Length 1203 μm (1184-1216), width 339 μm (320-368); membrane transparent, veins yellowish; C ending close to R_{4+5}, before wing apex; R_{2+3} ends halfway between R_1 and R_{4+5}. VR=1.20 (1.17-1.25). Membrane macrotrichia restricted to cells r_{4+5} and distal m_{1+2}. Vein macrotrichia on R and M_{1+2}.

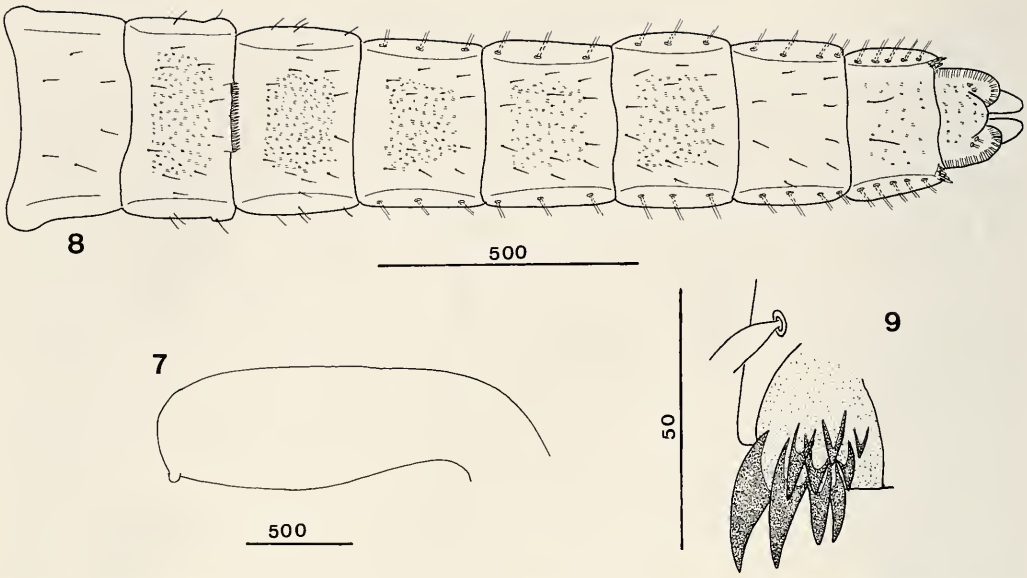
Legs. Yellowish brown, without transverse bands. Fore tibia with short, light-colored spur. Mid and hind tibiae each with two separate, dark combs; mid tibial spurs slightly, hind spurs strongly unequal in length (Fig. 2). Mid tarsus 1 with 2 sensilla chaetica. Segment lengths (in μm) and proportions:

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR
PI	518	237	637	318	269	191	95	2.69
	(512-532)	(228-244)	(628-640)	(304-328)	(260-280)	(184-196)	(88-100)	(2.62-2.75)
PII	521	399	231	113	86	59	48	0.58
	(500-540)	(396-400)	(220-240)	(104-124)	(84-88)	(56-60)	44-52	(0.56-0.60)
PIII	573	511	354	213	197	121	80	0.69
	(560-600)	(480-524)	(344-360)	(208-216)	(184-204)	(116-124)		(0.69-0.72)

Abdomen yellowish green. Hypopygium (Figs 3, 4): Anal tergite with 2 far distal setae. Anal tergal bands Y-shaped, fused part about 40 μm long. Anal point brown with slightly concave margins; dorsolateral margin bearing 2 setae, vertical ventromedian part with 1 distal and 1 more proximal pair of setae. Anal point bars short, originating on anal point and not reaching beyond it (Figs 3, 4);



Figs 1-6. *Caladomyia friederi*, spec. nov. Adults. **1.** Wing of male. **2.** Hind (top) and mid tibial combs and spurs. **3.** Hypopygium, dorsal; detail: tip of anal point, ventral. **4.** Hypopygium, lateral. **5.** Wing of female. **6.** Female genitalia, ventral. Scales in μm.



Figs 7-9. *Caladomyia friederi*, spec. nov. Pupa. **7.** Wing sheath. **8.** Abdomen, dorsal. **9.** Anal comb. Scales in μm.

AnPBR=1.8. Superior volsella with 4 dorsal setae and 2 on anterior part of median margin. Digitus long, reaching beyond posteromedian corner of superior volsella. Inferior volsella bent in an S-shape, tip slightly folded to dorsal, with 6 long and 3 shorter setae. Median volsella short, with 2 lamelliform and 4 simple setae.

Adult female (n=3)

Total length about 1.5 mm. Coloration as male.

Head. 5-7 uniserial temporals. Frontal tubercles absent. Antennal flagellum about as long as palp, Fm lengths 1-4: 70-72, 40-43, 50-60, 97-105 μm; AR=0.57-0.66. Eye bare, without dorsomedian extension. 11-12 clypeals. Palpomere lengths 2-5=22-25, 42-68, 58-80, 104-130 μm.

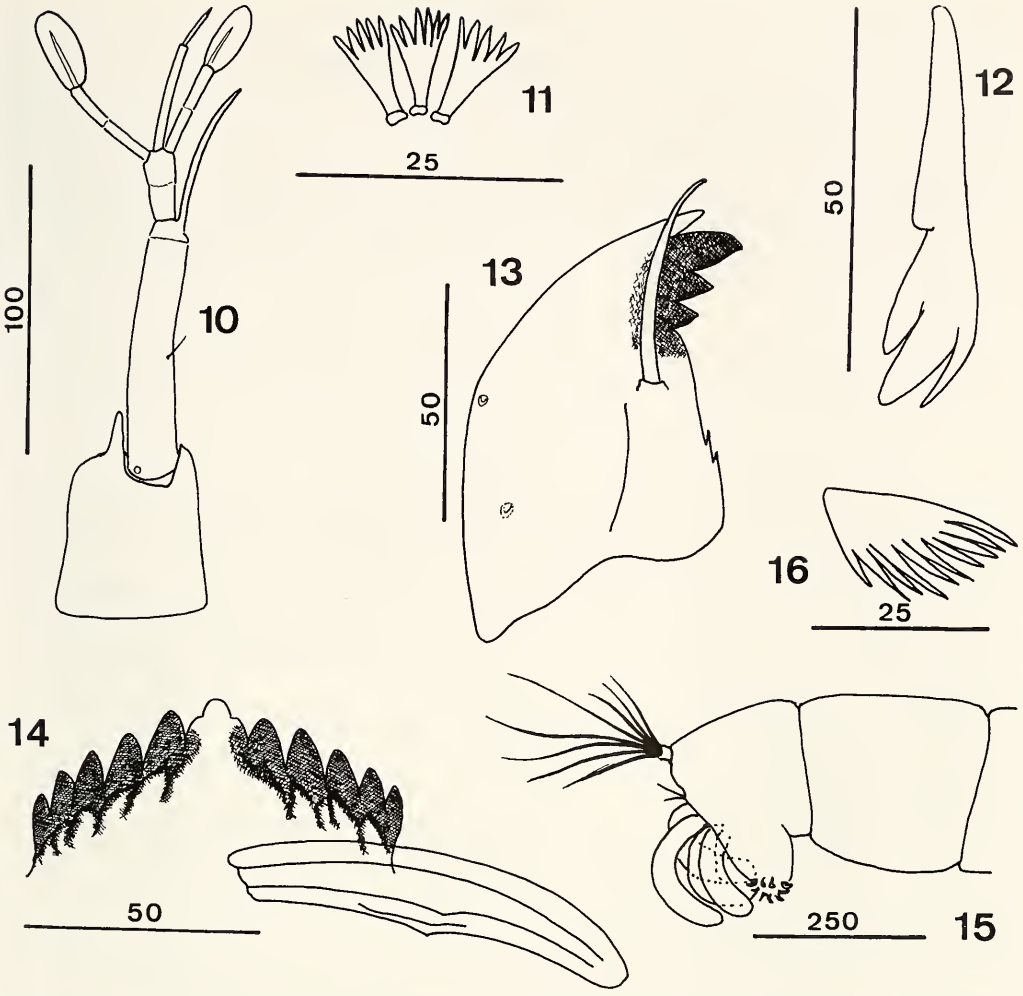
Thorax. 6-8 acrostichals, 4-6 dorsocentrals, 1 prealar, 4 scutellars (2 central, 2 lateral). Scutal tubercle absent.

Wing (Fig. 5). Length 1208 μm (1200-1216), width 412 μm (384-432); VR=1.27 (1.17-1.35). Macrotrichia on all veins except M, on posterior false veins, and in all cells posterior to R_{4+5} and M except cu, macrotrichia in cells more numerous toward wing tip.

Legs. Mid and hind tibiae each with two strongly unequal spurs. Mid tarsus 1 with 5-7 sensilla chaetica. Segment lengths (in μm) and proportions:

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR
PI	512	240	640	320	256	192	96	2.67
	(508-524)	(228-244)	(628-640)	(312-328)	(248-260)	(184-196)	(88-100)	(2.62-2.75)
PII	560	432	240	112	80	48	48	0.55
	(524-572)	(416-440)	(220-244)	(104-120)	(84-88)	(44-52)	(44-52)	(0.53-0.55)
PIII	560	512	352	208	176	128	64	0.69
	(540-600)	(480-524)	(344-360)	(200-216)	(168-184)	(120-132)		(0.69-0.72)

Genitalia (Fig. 6). Sternite VIII bearing 12-15 setae in an irregular transverse row or band, and 2-5 slightly smaller setae at each side of posteromedian sternite emargination; floor under vagina large, posteromedian contour of SVIII more or less V-shaped, forming an angle medially. GpVIII simple, rounded, with long, lightly curved caudolateral microtrichia. Notum slightly longer than free rami, about 1.5 times as long as seminal capsule. 2 seminal capsules present, ovoid, length 35-45 μm, with narrow neck (10-15 μm); spermathecal duct with long loop. GcaVIII conspicuous, nearly straight, running diagonally to posteromedian corner of SVIII. GcIX with 1 seta. TIX with about 10 strong setae;



Figs 10-16. *Caladomyia friederi*, spec. nov. Larva. **10.** Antenna. **11.** Pecten epipharyngis. **12.** Premandible. **13.** Mandible. **14.** Mentum and ventromental plate. **15.** Posterior abdominal segments. **16.** Posterior parapod claw. Scales in μm.

near transition TIX to GcIX a projection often present appearing similar to lateral teeth known from many male Tanytarsini TIX. Postgenital plate triangular. Cercus about as large as seminal capsule.

Pupa (n = 1)

Cephalothorax. Frontal setae elongate; cephalic tubercles absent. Thoracic horn not discernible in slide mount. Weak granulation close to median suture; scutal tubercle absent. Wing sheath with prominent nose (Fig. 7), pearl row absent. 3 lateral antepronotals, $LAps_1$ situated in front of and at same level as precorneals, $LAps_{2\text{-}3}$ close together and more ventral; 3 precorneals, situated in front and ventral of thoracic horn basal ring; 4 dorsocentrals in two widely separated pairs.

Abdomen (Fig. 8). Length about 2.5 mm. Tergite I without shagreen; T II-IV with central field of fine shagreen; VII without shagreen; VIII and IX with central fields of shagreen. Hook row continuous, occupying ⅓ width of segment II. Pedes spurii B present on II. Segment VIII with posterolateral combs consisting of 4-5 marginal and 5-6 overlapping ventral teeth (Fig. 9).

Abdominal setation. Segments II and III with 3 L setae; IV-VI with 3 LS setae; VII with 4, VIII with 5 LS setae. Anal lobe with 14-16 fringe setae and 2 dorsal setae, all lamelliform.

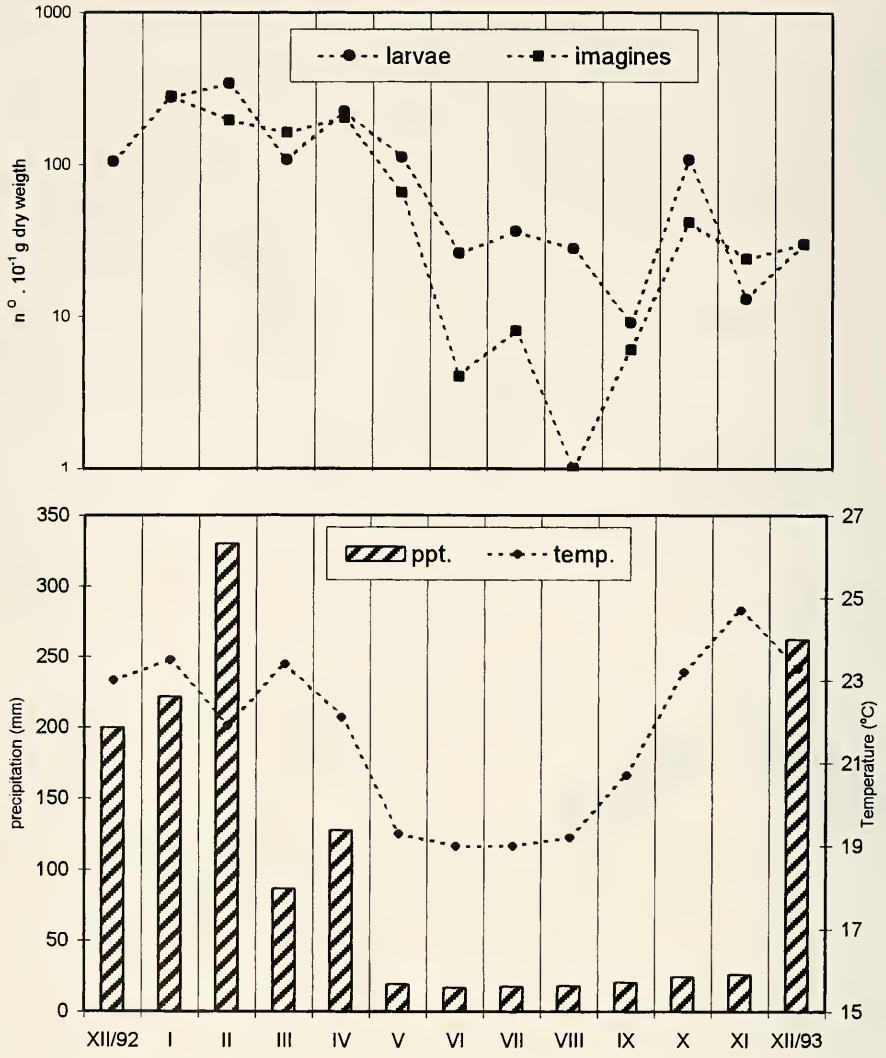


Fig. 17. Densities of *Caladomyia friederi*, spec. nov. on *Mayaca fluviatilis* from XII.1992 through XII.1993.

Fourth instar larva (n =5)

Size small, total length 3.74 mm (3.20-4.08).

Head. Width 197 μm (192-200), length 240 μm (232-248); IC=0.82. Antenna 5-segmented (Fig. 10), placed on pedestal bearing a distinct apical tooth; basal segment longer than flagellum, with basal ring organ and small seta in proximal ½; segment 2 unsclerotized distally, shorter than segment 3; Lauterborn organs large, pedicels 44 μm long, shorter than segment 3, their proximal half sclerotized. Pecten epipharyngis of 3 distally serrated scales (Fig. 11). Premandible with 3 teeth (Fig. 12). Mandible (Fig 13) with pale dorsal tooth; apical and two inner teeth brown. Mentum (Fig. 14) with pale median tooth slightly notched laterally, 5 pairs of lateral teeth brown, decreasing in size laterally. Ventromental plates close together medially.

Abdomen (Fig. 15) with anal tubules curved down. Posterior parapods, in addition to simple hooks, with some serrate claws (Fig. 16).

Ecology

The larvae of *Caladomyia friederi*, spec. nov. were found on submerged aquatic macrophytes, *Mayaca fluviatilis*, proliferating in a small lagoon (0.6 m mean depth, 0.17 ha surface area) with sandy bottom, situated in cerrado vegetation on the UFSCar campus. Population density showed the expected seasonal pattern following the region's climatic conditions (Fig. 17), with higher densities of both larvae and adults in the wet and warmest months of the year (max. 340 larvae per 10 g dry weight of the macrophyte in February 1992, and 280 adults per 10 g *Mayaca* dry weight in January 1992). During the cooler dry season (June-September), densities of larvae and adults decreased significantly.

Acknowledgments

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